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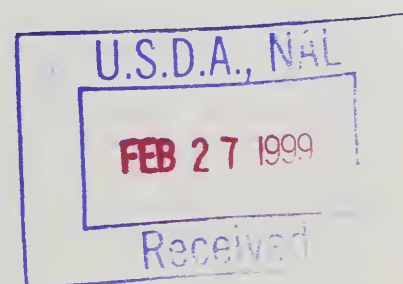
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Water Quality Enhancement Principles and Activities of the Agencies of the Department of Agriculture



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Foreword

In December 1986, the Department of Agriculture published its "Nonpoint Source Water Quality Policy" for its activities and programs to improve water quality conditions in the United States. That policy statement recognizes that agriculture, by virtue of its size and distribution, is a potential major source of pollution in some localities, and effort and emphasis are required by the Department to help achieve water quality goals. The Department's position is that the appropriate approach for dealing with nonpoint sources of pollution is to foster the application of Best Management Practices on the source areas rather than to attempt to impose effluent standards such as those used to regulate point sources of pollution. However, it is recognized that State water quality standards provide a basis for assessing the appropriateness of potential public uses of surface and ground water resources. With its nonpoint source policy statement, the Department made a commitment to coordinate its nonpoint water quality activities with other Federal agencies; to provide educational, technical, and other assistance to land users, States, and local governments; and to improve its database and research to better define and assess water quality and nonpoint source pollution problem areas.

Also recognizing the unique nature and importance of ground water resources, the Department issued its "Policy for Ground Water Quality" in November 1987. That policy addresses the unique relationship of ground water quality to many of the chemical compounds generated by, and used in, agricultural production.

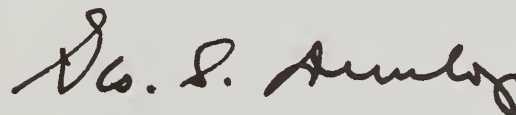
The Department finds that agriculture cannot continue to meet the needs of a growing population without the use and management of plant and animal nutrients or without the use of chemicals to control diseases, control pests, and promote growth. However, there must be an appropriate balance between the prudent management of these chemicals and the need to protect water users and the natural environment from exposure to harmful substances in ground water. Therefore, USDA is committed to support the prudent use and careful management of nutrients and

other chemicals in agriculture and silviculture with the objective of avoiding future ground water contamination and to enhance ground water quality where appropriate. (This is in addition to the Department's longstanding commitment to provide education and assistance to minimize other environmental and safety hazards associated with the use and management of agricultural chemicals and ground water in rural areas.)

The Department supports and advocates activities and practices, including low chemical input agriculture and nonchemical pest and disease management approaches, that will contribute to these objectives. The Department is now involved in numerous initiatives to increase its capabilities and effectiveness in research, education, information, data assembly and analysis, and assistance to support the enhancement of water quality in the Nation, especially in rural areas.

This report, which we have titled "Water Quality Enhancement Principles and Activities of the Agencies of the Department of Agriculture," is intended to document the implementation of the nonpoint source and ground water quality policies of the Department by providing a description of the principal activities being supported and taken by the agencies which have responsibilities in the area of water quality in the Department of Agriculture.

This document has been prepared by the USDA Water Issues Work Group, and its Water Quality Implementation Subgroup, under the direction of the USDA Natural Resources and Environment Committee and its chairman, the Assistant Secretary for Natural Resources and the Environment.



George S. Dunlop
Assistant Secretary
Natural Resources and the Environment

**Water Quality Enhancement Principles
and Activities of the Agencies of the
United States Department of Agriculture (USDA)**

Purpose:

This document provides a summary of some basic principles that guide the water quality programs of the Department of Agriculture and a brief description of current water quality-related activities of those agencies in the Department that are involved in or support water quality enhancement.

Some Basic Water Quality Principles

I. Toxic Substances

A. Pesticides

- Pesticides should be used only in ways which optimize their effects on target species.
- Pesticide effects on nontarget species and on water quality should be minimized.
- Pesticide users and the general public should understand the proper role of pesticides in maintaining agricultural production and public health.
- Pesticide users should understand the potential impacts of their decisions on water quality.
- Pesticide users should understand and use integrated pest management, crop rotations, and other practices that can reduce their need for synthetic pesticides.

B. Household Chemicals

- Users of common household chemicals (solvents, petroleum products, cleaning materials, and pesticides) should understand their potential to contaminate water resources and take action to avoid such contamination.
- Local programs to promote safe methods of disposal of household chemical residues and containers should be supported by USDA agencies.
- Practical nonchemical alternatives should be preferred to using household chemicals if those alternatives are less hazardous to human health and to water quality.

C. Waste Water and Sludge

- Water quality impacts should be avoided or minimized when disposing of waste water and sludge. Appropriate management systems and environmental safeguards should be instituted.
- Citizens should be informed of the environmental risks associated with disposing municipal and industrial waste water and sludge on land areas or in landfills.
- Sludge applications should be matched to the site's capability to assimilate such loadings.
- Land managers should understand the long-term implications of such.

D. Landfills

- Surface and ground water contamination should be avoided or contained through adequate design, siting, and operation of landfill waste disposal sites.

Designers of landfills should use soils, water, and geologic resource information available from USDA and USGS.

- Alternatives to landfills should be considered, evaluated, and used where they are practical, cost effective, and reduce impacts on water quality.
- Water quality considerations should be included when evaluating and selecting alternative waste disposal strategies.
- Programs to reduce solid waste loads should be part of all municipal waste management plans.

II. Nutrients and Organics

A. Commercial Fertilizer Management—Agricultural and nonagricultural land and water users should:

- Understand the likely impacts of their chemical management decisions on water quality and the potential for public oversight and regulation when chemicals are used unwisely.
- Use alternative nutrient management practices and cost-effective means to minimize their need for commercial fertilizers.
- Manage the commercial fertilizers in ways that protect water quality.

B. Organic Residue Management—Agricultural producers and processors, waste disposal contractors, and other relevant decisionmakers should:

- Understand the potential for the nutrients and organic residue in animal wastes, processing wastes, fish pond discharges, sewage sludge and waste water, and crop residues to affect surface water and ground water quality. They should understand the likely impact of their management decisions on water quality.
- Use organic plant and animal residues wisely for soil fertility improvement.
- Adopt waste management strategies that are compatible with water quality concerns.

C. Solid Waste Management—Private citizens and officials of local, State, and Federal governments should:

- Understand the potential impacts of contemplated solid waste disposal policies on agricultural production, on food and feed quality, and on water quality.
- Use alternatives to land application as a solid waste disposal method where practical.

- Develop recycling programs for as many kinds of solid wastes as are possible and practical.
- Adopt policies to ensure that agricultural areas are not “dumping grounds” for solid wastes.

III. Bacteria and Viruses

- A. Animal Wastes—Farmers, feedlot operators, and other decisionmakers should:
- Understand the potential for contaminating water with bacteria and viruses from animal wastes. They should understand the potential impacts that bacteria and viruses in water can have on human health.
 - Understand the potential for disease transmission to other animal herds and flocks via waterways.
 - Adopt strategies to reduce or preclude such contamination and to neutralize such contamination in domestic and livestock water supplies.
- B. Human Wastes—Rural residents and local government officials should:
- Understand the need for proper treatment of human wastes to preclude water degradation.
 - Realize the effects of bacterial water contamination on human health, especially from contaminated ground water in rural areas.
 - Adopt strategies and human waste management systems that will minimize water quality degradation in rural areas.
 - Monitor and treat drinking well water supplies to remove possible pathogens.

IV. Salinity

- A. Agricultural Sources—Farmers, other landowners, and other relevant decisionmakers should:
- Understand the impacts of salinity on soil and water quality.
 - Recognize the importance of water management and adequate drainage in managing salinity.
 - Install water supply and drainage systems that can allow high efficiencies in agricultural water management.
 - Manage agricultural water to minimize the buildup of salts in the agricultural lands and to reduce salt movement in drainage water over time.
 - Manage ground water withdrawals to minimize salt water intrusion into aquifers.

- B. Nonagricultural Sources—Private citizens, municipal authorities, and officials of local and State governments should:

- Understand the threats associated with salt water intrusion into freshwater aquifers.
- Understand the role of conservation programs and policies to forestall or preclude saltwater intrusion.
- Adopt effective, equitable practices to preserve freshwater supplies.

V. Sediment

- A. Agricultural Sources—Farmers, agribusinesses, and other decisionmakers should:
- Understand the sources of sediments, and their impacts on water quality.
 - Appreciate the likely impacts of their land management decisions.
 - Be aware of the likely alternatives to effective, self-imposed actions.
 - Adopt practices for reducing sediments.
- B. Silvicultural Sources—Forest landowners, logging contractors, and other relevant decisionmakers should:
- Understand and appreciate the likely impacts of their management decisions on water quality.
 - Be aware of the range of techniques available to reduce timber harvest-associated sediment production.
 - Be aware of likely alternatives to effective, self-imposed sediment control measures.
 - Adopt strategies to reduce or eliminate the production of sediments.
- C. Construction Sources—Planning officials, contractors, government officials, and other decisionmakers should:
- Understand the impacts of construction-generated sediments on water quality.
 - Appreciate the likely impacts of their operational decisions on water quality.
 - Be aware of the techniques for reducing sediment production.
 - Be aware of legal requirements for sediment control.
 - Adopt operational practices to reduce or eliminate the production of sediments.

Agency Resources and Activities

General:

The statements of principles in the preceding section reveal two themes that will guide the water quality programs of USDA. The first is that people must understand the relationships between the land, chemicals, and water they use and the quality of the water involved before they will work to avoid future water contamination or work to enhance water quality where it is needed. They also need to understand how their own actions have direct and indirect impacts on water quality.

The second major theme of the principles stated above is that landowners, local government agencies, State agencies, USDA, and other Federal agencies frequently need information, education, technical advice, and financial assistance. Therefore, the primary water quality functions of the agencies in USDA are to:

- Conduct research to obtain information and develop new technologies.
- Provide education, public information, and demonstration activities.
- Provide technical assistance, and sometimes financial assistance, to individuals who request it.
- Manage the national forest lands and departmental facilities with the best management practices to avoid harmful water pollution.

USDA agencies administer a wide variety of programs that support, assist, and guide the enhancement of water quality, especially in rural areas of the Nation. Education, technical assistance, financial assistance, research, monitoring, and evaluation are all essential components of these programs.

Each of the agencies described below has its own unique activities according to its principal mission and functions. Managers in the agencies actively pursue opportunities for interagency coordination where program responsibilities, activities, and needs overlap.

Agencies of the Department are required by environmental laws to evaluate any significant impacts their respective programs have on water quality, as well as on other components of the natural and human environment, and to mitigate significant adverse effects where they occur. The agencies often have objectives to go well beyond these minimum requirements in order to initiate positive actions that will enhance surface and ground water quality where needed.

USDA agencies will cooperate in developing, using, and recommending Best Management Practices for:

- The safe, efficient use and disposal of pesticides, household chemicals, and sewage sludge for incorporation into education, technical assistance, and financial assistance programs.
- The proper siting, construction, and management of landfill disposal sites.
- The proper handling and disposal of animal and human waste and the avoidance and control of bacterial and viral contamination.
- The management, reduction, and/or elimination of salinity inputs or intrusions.
- The management, reduction, and elimination of agricultural and nonagricultural sources of sediment.

I. Agricultural Research Service (ARS)

ARS conducts basic, applied, and developmental research in the fields of livestock; plants; pest control; soil, water, and air quality; energy; food safety and quality; nutrition; food processing, storage, and distribution; and other related topics. ARS also administers grants to universities, colleges, and promising students to strengthen educational programs in the food and agricultural sciences. To support the enhancement of water quality, ARS will continue to:

- Evaluate the effects of tillage pesticides on the movement of pesticides into surface waters and ground waters.
- Evaluate the economic and environmental effects of various agricultural systems, including crop rotations, controlled-release herbicides, water table management, chemigation techniques, and integrated pest management.
- Develop improved models of pesticide transport and related physiochemical data and cultural management information to provide farmers with improved crop production systems that minimize water quality degradation by pesticides.
- Develop viable biological control methods to reduce crop losses from insects, diseases, and weeds and to use as cost-effective alternatives for controlling household pests.
- Provide information about the environmental risks involved in disposing of municipal and industrial waste waters and sludges on agricultural lands and provide information about how to manage such practices to maximize the benefits of using the nutrients and conditioning the soil while minimizing adverse impacts on the environment and public health.

- Develop cost-effective techniques (including biological processes, chemical processes, and land treatment techniques) for disposing of residual nutrients, pesticides, and pesticide containers used in agriculture and rural communities and provide information about how to keep some of these hazardous materials out of landfills and waste disposal systems.
- Develop and provide improved methods for assessing and managing nitrate levels in soils and for predicting the nitrate available to plants during the growing season.
- Develop improved methods for managing crops, fertilizers, tillage, and soil water management practices that will better match the use of nutrients to the needs of the crops and reduce nutrient losses to surface water and ground water.
- Develop crops and cropping systems that require less use of agricultural nutrients and pesticides.
- Develop improved methods for managing plant and animal wastes and residues and reducing their impacts on water quality.
- Develop less costly techniques for detecting and measuring levels of salinity and alkalinity in soils, subsoils, and underlying formations in agricultural areas and to delineate the major sources.
- Develop more cost-effective irrigation, water table management, and agricultural practices to reduce the movement of salts into ground water while maintaining soil productivity.
- Develop improved models for use by farmers, consultants, and USDA personnel to improve the management of, and predict the occurrence of, salinity, alkalinity, and trace elements in soils, ground water, and receiving surface waters.
- Develop improved methods and models for predicting and measuring erosion and sedimentation under all climate, weather, topography, and land cover conditions and for various control and management practices.
- Develop improved practices, including soil amendments and other practices, for controlling erosion and sedimentation and for improving soil conditions.

II. Agricultural Stabilization and Conservation Service (ASCS)

ASCS administers commodity and cropland diversion programs aimed at supporting farm prices, adjusting farm production, and protecting natural resources. To work to enhance water quality, ASCS will continue to:

- Alert producers to the technical and financial assistance available to support proper management of soil, water, agricultural nutrients,

and other agricultural chemicals. (This includes providing general basic information about USDA programs and their potential water quality enhancement benefits to ASCS program applicants and their communities.)

- Provide financial assistance for practices that directly or indirectly enhance water quality, including cultural practices that result in reduced levels of uses of agricultural chemicals and improved management of plant and animal nutrients as well as soil and water conservation practices that reduce the transport of sediments, nutrients, salts, and pesticides to surface and ground water.
- Provide financial support short-term and long-term land retirement programs that reduce agricultural production and result in lower levels of uses of agricultural chemicals and reduced transport of sediments, nutrients, and pesticides from the retired areas.
- Provide ASCS financial assistance only to those producers who comply with legal and appropriate standards and specifications as determined by the appropriate technical agencies.
- Provide farm program payments only to producers who meet soil and water conservation requirements of the law.
- Administer special projects, such as those in the Rural Clean Water Program and ASCS special water quality products, that enhance water quality.
- Assemble data on conservation program applications, production levels, financial impacts, and related environmental benefits.

III. Animal and Plant Health Inspection Service (APHIS)

APHIS helps to safeguard the health and quality of the Nation's agricultural animals and plants. Protection begins at ports of entry, where APHIS maintains close surveillance of all animal and plant imports, cargoes, and passenger baggage to prevent the entry of foreign animal and plant pests and diseases. On the domestic front, APHIS assists the States and the agricultural industry to eradicate and control animal diseases and pest infestations. APHIS licenses the manufacturers and marketers of chemicals used for veterinary biological purposes, enforces Federal laws pertaining to humane treatment of animals, and regulates the introduction of genetically engineered organisms that are plant pests. To support enhancement of water quality, APHIS will continue to:

- Work within the Department, with other Federal agencies, and with the States in developing pest control programs, such as those for rangeland grasshopper, boll weevil, medfly, and other pests, that will benefit farmers and others.

- Ensure the safe and efficient use and disposal of all such pesticides where APHIS pest control programs rely upon the use of pesticides.
- Train its personnel in proper pesticide use and conduct a special program to certify its applicators.
- Follow the provisions of the National Environmental Policy Act and to act with the intention of protecting water quality and other elements of the environment when conducting its pest and disease control programs.

IV. Cooperative State Research Service (CSRS)

CSRS coordinates water quality research conducted by the State Agricultural Experiment Station (SAES) and land-grant universities; allocates and administers funds appropriated for special and competitive grants for water quality research; cooperates with the Agricultural Research Service; and facilitates multidisciplinary regional research, especially for efforts having demonstration and educational components involving research and Extension personnel from SAES, and from university, State, Federal, and private agencies. Current and planned research includes projects that deal with:

- The documentation of sources and amounts of potentially hazardous pollutants attributable to agricultural and forestry practices.
- The transport and fate of nutrients; pesticides; and domestic, animal, and processing wastes in the soil, water, and air.
- The development of new, rapid, reliable, and inexpensive analytical methods to determine the presence and movement of potential pollutants through soils to ground water.
- The development and evaluation of Best Management Practices and systems, including economic, social, and political impacts of alternative agricultural and silvicultural management strategies that focus on more effective use of chemical and waste inputs, and of methods to mitigate the creation and transport of potential pollutants to surface waters and ground water.
- The development of inexpensive, simple, onfarm methods to dispose of pesticide containers and hazardous wastes safely.
- The development of data bases, models, and systems that can be used as decision management tools for producers, management, and regulatory agencies.

V. Economic Research Service (ERS)

ERS performs economic and policy impact research and analysis on numerous topics related to domestic and foreign agriculture and rural America. The Agency examines trends and makes short- and long-term projections of supply, demand, commodity use patterns, production technologies, employment, population, housing, energy use, international trade, and prices at the farm gate and at the wholesale and retail levels. ERS also provides estimates of the impacts of environmental regulations on commodity production and the use of land and water in agriculture. To better evaluate the implications of agricultural chemical uses and agricultural practices on ground and surface water quality, ERS will continue to:

- Work with the National Agricultural Statistics Service and other agencies to expand the collection, assembly, and analysis of data about the use of chemicals in agriculture and forestry.
- Conduct research on (1) the impacts of agricultural production practices and farm programs on water quality and (2) the potential impacts on the agricultural sector of various policy options for promoting water quality.

VI. Extension Service (ES)

The ES is the primary educational arm of the Department of Agriculture, supporting the Extension Services of State and county governments for agriculture-related activities. Working together, the County Extension Agents, State Extension Services, and the USDA Extension Service are all members of the Cooperative Extension System (CES). The CES transfers research information, develops research-based recommendations, and delivers education, information, and problem-solving programs on water quality issues. For more information about the activities and roles of the CES, see "Roles of the Soil Conservation Service and Extension Service."

VII. Farmers Home Administration (FmHA)

FmHA administers loans for ownership and operation of family-size farms and ranches. Some rural development loans and grants also have an impact on rural community facilities, and loans are also available for soil and water conservation activities on farms and for water supply and pollution abatement activities in rural communities. Emergency disaster loans are made by FmHA to help farmers and ranchers recover from natural disasters. The loan programs administered by the FmHA sometimes can have a significant impact on land and water use choices

made by loan applicants. FmHA shares in USDA's responsibilities for enhancing water quality and will continue to:

- Provide loans for soil and water conservation and water quality enhancement activities on farms and ranches and in rural communities.
- Require that applicants comply with applicable Federal and State water quality protection standards in the activities for which loans and grants are requested.
- Provide information to borrowers about sources of technical and financial assistance, including assistance available through USDA agencies, for measures that can be taken to enhance water quality.

VIII. Federal Crop Insurance Corporation (FCIC)

FCIC's primary goal is to improve the economic stability of agriculture through a sound system of crop insurance. FCIC provides a multiple peril crop insurance program delivered to insureds through Master Marketing Contractors and Reinsured Companies. Insurance, depending upon the State, is offered on 50 crops in the United States and covers losses from adverse weather conditions, insects, disease, and other unavoidable natural causes. Crop insurance does not cover losses due to neglect, poor farming practices, or theft. Participation is voluntary and the producer pays a premium, but the Federal Government provides a subsidy for a portion of the cost of the insurance. The insurance covers losses up to 75 percent of the average historical yields, and the insureds can select 1 of 3 price levels for determining the payments to be made in the event production falls below the insurance guarantee. Farm credit lenders frequently require borrowers to purchase crop insurance. FCIC program policies can support the enhancement of water quality by:

- Requiring that insureds comply with the conservation requirements of the Food Security Act.
- Requiring that insureds follow technical farm and chemical management standards established by local and State governments and by other USDA and Federal agencies.
- Allowing, on a case-by-case basis, flexibility in yield determinations for changes in farm management practices such as introduction of legumes into farm crop rotation patterns.
- Providing information about programs administered by other USDA agencies, including ASCS, SCS, CES, and FS, to current and potential insureds.

IX. Food Safety and Inspection Service (FSIS)

FSIS administers the Federal Meat Inspection Act and the Poultry Products Inspection Act, which provide for uniform Federal-State inspection of all meat and poultry products. The inspection programs are designed to guard against harmful bacteria and chemical residues, establish grading standards for meat and poultry, and provide standards for identifying the contents of processed foods containing these products. To guard against contamination of meat and poultry products, FSIS requires that:

- Only water meeting or exceeding potable water standards is to be used in processing edible meat and poultry products or on equipment that handles these products.
- Agricultural chemicals used in the production of livestock and poultry be used in ways that prevent harmful contamination of the inspected meat and poultry products.

To accomplish these objectives, FSIS will continue to:

- Regulate closely the use of pesticides, rodenticides, and other chemicals in livestock and poultry production and processing.
- Require compliance with Federal, State, and local guidelines for water discharges from processing plants.
- Develop guidelines for the inplant treatment and reuse of water as a measure for conserving water quality and quantity.

X. Forest Service

The Forest Service manages the land, water, and other natural resources in the National Forest System and cooperates with State agencies in providing silvicultural information and assistance to non-Federal forest landowners. The FS also maintains a nationwide research program to support its management and cooperative efforts. Almost all activities on forest lands have the potential to affect water quality, either to benefit it or to reduce it. To minimize potential adverse effects of timber harvesting, pest control, recreation, landfill waste disposal, and other activities and to improve water quality where practical, the FS will continue to ensure that:

- Water quality protection features are included in the standards, specifications, and requirements for all actions taken on the National Forests.
- Best Management Practices (BMPs), including nonchemical methods of pest control where effective, are defined and followed for all other forest resource management activities.

- Specifications for all permitted activities include requirements to protect water quality.
- NEPA rules for analysis, documentation, disclosure, and public involvement are properly followed for all activities having significant impact on the environment.
- Land use activities, recreational facilities, mining activities, waste disposal activities, and other potential sources of pollution on National Forest lands are monitored to ensure that BMPs are (1) implemented as designed and (2) adequately protecting or enhancing water quality. Where, after a time for monitoring and evaluation, it is determined that beneficial uses are not being adequately protected, the BMPs will be redesigned and improved.
- Research on BMPs results in improved technologies for water quality enhancement.
- Private forest landowners and State foresters are provided with information on BMP design and use.
- Forest Service applicators of restricted-use pesticides are properly trained and certified.
- Hazardous chemical wastes, including residues and containers of household-type pesticides used in Forest Service buildings for pest control or research, are disposed of in a manner that will protect water quality.
- Waste water facilities on National Forest lands are adequately designed and are operated and monitored in compliance with State and EPA permitting requirements.
- Water quality in the National Forest System is monitored to ensure that waters are safe for contact recreation.

XI. Rural Electrification Administration (REA)

More than 26 million rural people in 47 States are served by electric and telephone services provided by systems financed through loans from REA, the Rural Telephone Bank, and other lenders backed by REA programs. To ensure adequate water quality and environmental protection, telephone and electric generating and transmission facilities financed and operated through these loans must meet environmental criteria established under all appropriate local, State, and Federal programs.

To help maintain water quality, REA requires that:

- Herbicides not be used in close vicinity to water bodies by electric and telephone companies that have REA loans.

- Applicants for power and telephone facilities that include landfills explore reasonable alternatives that will reduce the volume of solid waste and that these alternatives be presented in the environmental documents prepared and submitted before REA's decision on the project.
- Applicants for financial assistance develop and submit a reasonable plan for erosion and sedimentation control where appropriate. As a condition of the grant of financial assistance, the applicant is expected to implement this plan during construction and operation of the facility.

XII. Soil Conservation Service (SCS)

SCS was created to control and prevent soil erosion, and this is still its primary function. Subsequent statutes have provided supplementary authority for SCS to conduct soil surveys, snow surveys, and natural resource inventories and to provide technical and financial assistance for water quality enhancement, watershed protection, flood control, rural resource development, flood emergencies, improved range management, agricultural water management, rural area recreational facilities, and so on. See "Roles of the Soil Conservation Service and Extension Service" for a description of SCS water quality enhancement roles.

XIII. World Agricultural Outlook Board (WAOB)

WAOB coordinates weather and climate activities for the Department of Agriculture. WAOB also provides liaison with other Federal agencies, the National Academy of Sciences, the National Science Foundation, the National Climate Program, and so on, as well as with State, university, private sector, and international organizations on weather and climate matters. The WAOB will continue to:

- Assist in locating and acquiring weather and climate data for user agencies.
- Communicate opportunities for USDA participants in research of projects that could have water quality benefits. For example, Project STORM will provide detailed weather data for use in water quality work that would not normally be available.
- Follow developments in Agricultural Meteorology Research projects that could contribute to achieving the USDA water quality goals.

Activities of the Soil Conservation Service and the Extension Service

On June 3, 1988, Wilson Scaling, Chief of the Soil Conservation Service, and Myron Johnsrud, Administrator of the Extension Service, jointly signed a new Memorandum of Understanding relating to implementation of USDA water quality policies. A companion document titled "Roles of the Cooperative Extension System and the Soil Conservation Service for Implementation of USDA Water Quality Policies" was published and distributed in August 1988 as a companion document for the Memorandum of Understanding between these two agencies. To maintain the integrity of these intensely negotiated documents, the activities described here are verbatim extracts from the SCS-CES "Roles" document

I. Toxic Substances

A. Pesticides

(1) Role of the Cooperative Extension System

- (a) Conduct programs for commercial and private applicators of pesticides, including appropriate uses, control measures, safety precautions, and implications of pesticide use on water quality.
- (b) Evaluate the impacts of restricted-use chemicals on target species and on water quality.
- (c) Interpret research for recommendations to pesticide users and pesticide distributors that include water quality concerns.
- (d) Integrate water quality concerns into current technologies to minimize the use of potential (water) contaminants in pest control programs.
- (e) Create public awareness and understanding of the benefits and liabilities of pesticide use in the production of food and fiber.

(2) Role of the Soil Conservation Service

- (a) Provide site-specific land resource data and planning assistance with regard to pesticide uses and impacts on water quality to pesticide users and others making land use and management decisions.
- (b) Assist landowners with the implementation of acceptable pesticide management practices.

B. Household Chemicals

(1) Role of the Cooperative Extension System

Build awareness and understanding of the benefits and liabilities (especially water quality liabilities) of the use and disposal of common household chemicals.

(2) Role of the Soil Conservation Service

Provide site-specific land resource data, such as soil surveys, land use, climatic factors, hydrologic conditions, and analysis and interpretations of these data, to use in evaluating impacts on water quality.

C. Waste Water and Sludge

(1) Role of the Cooperative Extension System

- (a) Conduct programs that create public understanding of the benefits and liabilities of land application of waste water and sewage sludge.
- (b) Provide landowners, land managers, and public decisionmakers with an understanding of current technologies for the management of waste application areas to minimize adverse environmental impacts.

(2) Role of the Soil Conservation Service

- (a) Provide site-specific resource data, such as soil surveys, land use, climatic factors, hydrologic conditions, and analysis and interpretations of these data, for evaluating potential sites for the land application of waste water or sludge.
- (b) Provide planning and implementation assistance to farmers and ranchers who use waste water, sludge, extracted nutrients, or other beneficial components. Assistance must conform to applicable Federal, State, and local laws and regulations.

(D) Landfills

(1) Role of the Cooperative Extension System

- (a) Conduct programs that create public understanding of the benefits and liabilities of

the use of landfills for the disposal of domestic or municipal solid wastes.

(b) Provide managers and local officials with an understanding of current technology for the management of landfills to minimize adverse environmental impacts.

(c) Educate the public and local government officials about current technologies for the selection and management of waste disposal systems, including technologies to reduce volume of disposable solid wastes.

(2) Role of the Soil Conservation Service

(a) Provide site-specific land resource data, such as soil surveys, land use, climatic factors, hydrologic conditions, and analysis and interpretations of these data, for use in evaluating potential landfill sites for the disposal of domestic or municipal solid waste.

(b) Provide planning assistance to units of government and others outside urban areas for site-specific conservation land use and treatment decisions needed to control erosion and runoff on specific landfill sites and adjacent areas and to screen it as needed to prevent visual pollution.

II. Nutrients and Organics

A. Chemical Fertilizer Management

(1) Agricultural use

(a) Role of the Cooperative Extension System

(i) Transfer to users, suppliers, and manufacturers the latest technology and recommendations for the safe and efficient use of nutrient materials—lime, chemical fertilizers, animal wastes, and crop residues.

(ii) Conduct programs to build users' understanding of the impacts of their nutrient management decisions on water quality.

(iii) Create public understanding of the importance and implications of nutrient management systems in the production of food and fiber.

(b) Role of the Soil Conservation Service

(i) Provide resource data and the interpretation of the data and planning assistance to landowners, land users, and others making land use and treatment decisions for the proper use of lime, chemical fertilizer, and animal waste practices for the safe and efficient use of nutrient materials.

(ii) Assist landowners with the implementation of site-specific recommendations for the proper use of lime, chemical fertilizer, and animal wastes.

(2) Nonagricultural Use

(a) Role of the Cooperative Extension System

(i) Conduct education programs for nonagricultural users that provide the latest technology and recommendations for the safe and efficient use of fertilizers.

(ii) Assure that these programs create users' understanding of likely impacts of their individual fertilizer use decisions on water quality.

(b) Role of the Soil Conservation Service

Provide land resource data, planning, and technical assistance to groups and/or units of governments in the implementation of management and structural practices that efficiently use all nutrients and reduce pollutants from nonpoint sources.

B. Organic Waste Management

(1) Agricultural Use

(a) Role of the Cooperative Extension System

(i) Conduct educational programs for specific audiences on the proper handling and use of organic wastes to minimize the potential for nutrient contamination of water resources.

(ii) Provide agriculture producers with an understanding of current technologies for the management and use of organic wastes as crop nutrient sources.

(b) Role of the Soil Conservation Service

(i) Provide site-specific land resource data and planning assistance to landowners, land users, and others making land use and treatment decisions with regard to proper handling and use of animal waste to minimize the potential for nutrient contamination of water resources.

(ii) Assist landowners with the design and implementation of site-specific land resource recommendations for animal waste management practices.

(2) Nonagricultural Use

(a) Role of the Cooperative Extension System

(i) Conduct educational programs for the respective audiences that create an understanding of proper handling practices and uses of organic wastes to minimize the potential for nutrient contamination of water resources.

(ii) Transfer to users current technologies for the management and use of organic wastes as crop nutrient sources.

(b) Role of the Soil Conservation Service

(i) Provide site-specific land resource data and planning assistance to landowners, land users, and others making land use and treatment decisions with regard to proper handling and use of animal waste to minimize the potential for nutrient contamination of water resources.

(ii) Assist landowners with the design and implementation of site-specific land recommendations for animal waste management practices.

(b) Conduct programs for water users on the potential for bacterial contamination of water and procedures to eliminate such contamination.

(2) Role of the Soil Conservation Service

(a) Provide site-specific land resource data and planning assistance to landowners, land users, and others making land use and treatment decisions with regard to proper handling and use of animal waste to minimize the potential for bacterial contamination of water resources.

(b) Assist landowners with the design and implementation of site-specific land resource recommendations for animal waste management practices.

B. Human Wastes

(1) Role of the Cooperative Extension System

(a) Conduct programs for the respective audiences that address the proper treatment of human wastes in rural areas, including the siting, construction, and management of septic systems and other human waste treatment systems.

(b) Conduct programs for water users on the bacterial contamination of water and practices to eliminate such contamination.

(c) Provide rural residents and local government officials with current technology for the management of rural waste disposal systems.

(2) Role of the Soil Conservation Service

(a) Provide site-specific resource data, such as soil surveys, land use, climatic factors, hydrologic conditions, and analysis and interpretations of these data, to use in evaluating potential sites for septic systems and other human waste treatment systems.

(b) Provide assistance to farmers and ranchers who accept wastes for use of water, nutrients, or other beneficial components as a resource to minimize contamination of water resources. Assistance will conform to applicable Federal, State, and local laws and regulations.

III. Bacteria and Viruses

A. Animal Wastes

(1) Role of the Cooperative Extension System

(a) Conduct educational programs to address the proper handling and use of animal wastes to eliminate the potential for bacterial contamination of water resources.

IV. Salinity:

A. Agricultural Sources

- (1) Role of the Cooperative Extension System
 - (a) Conduct programs to assess saline agricultural inputs into freshwater resources.
 - (b) Provide landowners and land managers with current technology for the management, reduction, or elimination of agriculturally related salinity inputs or intrusions into freshwater resources.
- (2) Role of the Soil Conservation Service
 - (a) Provide site-specific land resource data and planning assistance to landowners, land users, and others making land use and treatment decisions for the control of mineral salt pollution of water resources.
 - (b) Assist landowners with the design and implementation of site-specific land resource recommendations for mineral salt control and abatement practices.

B. Nonagricultural Sources

- (1) Role of the Cooperative Extension System
 - (a) Conduct programs for water users and local decisionmakers that address the role of nonagricultural sources of saline waters which affect the quality of water resources.
 - (b) Provide water users and decisionmakers with an understanding of current technology for the management, reduction, or elimination of such saline inflows.
- (2) Role of the Soil Conservation Service
 - (a) Provide site-specific resource data, such as soil surveys, land use, climatic factors, hydrologic conditions, and analysis and interpretations of these data, to address nonagricultural sources of mineral salt pollution of freshwater resources.
 - (b) Provide site-specific land resource inventory assistance to units of government and other nonagricultural entities to address sources of mineral salt pollution.

V. Sediment

A. Agricultural Sources

- (1) Role of the Cooperative Extension System
 - (a) Conduct programs for the respective audiences that address the impacts of agriculture-related sediments on water quality and alternative strategies to manage, reduce, or eliminate water quality impairment from such sources.
 - (b) Conduct programs for land managers and public decisionmakers that address the relative roles of agricultural and nonagricultural sources of water quality-impairing sediments.
 - (c) Conduct programs for land managers that increase the adoption of practices for the reduction of agriculture-related sediments.
 - (d) Provide land managers with current technology for the management, reduction, or elimination of agriculturally related, water quality-impairing sediments.

(2) Role of the Soil Conservation Service

- (a) Provide site-specific resource data and planning assistance to landowners, land users, and others making land use and treatment decisions with regard to the movement and reduction of sediment from wind and water erosion and its impacts on water quality.
- (b) Assist landowners with the implementation of site-specific land resource recommendations for erosion and sediment control practices that reduce sediment loads to receiving waters.

B. Silvicultural Sources

- (1) Role of the Cooperative Extension System
 - (a) Conduct programs for forest land managers and users that address the impacts of silviculture-related sediments on water quality and the potential strategies to manage, reduce, or eliminate water quality impairments from such sources.
 - (b) Provide these audiences with an understanding of appropriate practices for reducing silviculturally related water quality-impairing sediments.

(2) Role of the Soil Conservation Service

(a) Provide site-specific resources inventory data and planning assistance to landowners, land users, and others making land use and treatment decisions to control sediment and erosion and storm water management during logging operations on privately owned lands.

(b) Assist landowners with the implementation of site-specific land resource recommendations for erosion and sediment control practices for silviculturally related activities to achieve sediment reduction to receiving waters.

C. Construction Sources

(1) Role of the Cooperative Extension System

Conduct programs for the respective audiences that address the impacts of urban sediment and

erosion control and storm water management and programs to manage, reduce, or eliminate water quality impairments from such urban sources.

(2) Role of the Soil Conservation Service

(a) Provide site-specific resource data and planning assistance to units of government, developers, and others making land use and treatment decisions with regard to the movement and reduction of sediment from wind and water erosion on construction sites.

(b) Assist landowners and developers with the implementation of site-specific land resource recommendations for erosion and sediment control practices that achieve sediment reduction to receiving waters.

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